

Appl. No. 10/648,523
Amdt. dated May 24, 2006
Reply to Office Action of February 24, 2006

Amendments to the Claims:

This listing of claims will replace all prior versions, and listing, of claims in the application.

Listing of Claims:

1. (Previously Presented) A light guide plate comprising:
a light incident surface for receiving light;
first and second light emission surfaces for emitting light; and
a light reflection pattern formed on the first light emission surface, for reflecting light toward the second light emission surface, the light reflection pattern including a plurality of dots, wherein the dots each have light reflecting surfaces elongated in a selected direction, wherein adjacent ones of the light reflecting surfaces meet each other at elongated edges of the adjacent light reflecting surfaces to form an angle between the adjacent reflecting surfaces.

2. (Canceled)

3. (Canceled)

4. (Previously Presented) The light guide plate of claim 2, wherein the light reflection pattern has different densities of the dots at different areas on the first light emission surface such that the closer is an area of the light reflection pattern to the light incident surface, the lower is a density of the dots at the area.

5. (Original) The light guide plate of claim 4, wherein the dots have different sizes such that the more distant is a dot from the light incident surface, the larger is the dot.

6. (Original) The light guide plate of claim 4, wherein the dots have a substantially identical size, and a number of the dots at a unit area closer to the light incident surface is smaller than a number of the dots at a unit area farther from the light incident surface.

7. (Canceled)
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8. (Canceled)

9. (Previously Presented) The light guide plate of claim 1, wherein the angle between the adjacent reflecting surfaces is in a range from about 80° to about 120°.

10. (Previously Presented) The light guide plate of claim 1, wherein the angle between the adjacent reflecting surfaces is in a range from about 82° to about 84°.

11. (Previously Presented) The light guide plate of claim 1, wherein the light reflecting surfaces are aligned in a direction parallel with the light incident surface.

12. (Previously Presented) The light guide plate of claim 1, wherein the dots of the light reflecting pattern include first dots having the light reflecting surfaces aligned in a first direction and second dots having the light reflecting surfaces aligned in a second direction.

13. (Original) The light guide plate of claim 12, wherein the first direction is parallel with the light incident surface and the first and second directions are perpendicular to each other.

14. (Original) The light guide plate of claim 12, wherein the first direction is parallel with the light incident surface and the second direction is one of random directions independent of the first direction.

15. (Original) The light guide plate of claim 12, wherein the first dots are arranged in a matrix form, and the second dots are each interposed between adjacent ones of the first dots.

16. (Previously Presented) The light guide plate of claim 1, wherein the light reflecting surfaces each have at least one bent portion.

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17. (Previously Presented) The light guide plate of claim 1, wherein the light reflecting surfaces are formed on the surface of the dots in a concave shape.

18. (Previously Presented) The light guide plate of claim 1, wherein the light reflecting surfaces are formed on the surface of the dots in a convex shape.

19. (Previously Presented) The light guide plate of claim 1, wherein the dots of the light reflection pattern are formed integrally on the first light emission surface.

20. (Previously Presented) The light guide plate of claim 1, wherein the dots of the light reflection pattern are formed on a separate sheet attached on the first light emission surface.

21. (Original) The light guide plate of claim 1, wherein the light reflection pattern is made of material having a refraction index same as that of material of a body of the light guide plate.

22. (Withdrawn) A backlight assembly for providing light with uniform luminance, comprising:

a light guide plate including:

a light incident surface for receiving light;

first and second light emission surfaces for emitting light at a first light emission angle with respect to the first and second light emission surfaces; and

a light reflection pattern formed on the first light emission surface, for reflecting light toward the second light emission surface, wherein the reflected light from the light reflection pattern exits the second light emission surface at a second light emission angle with respect to the second light emission surface;

a light source for providing light to the light incident surface of the light guide plate; and
a receiving container for receiving the light guide plate and the light source.

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23. (Withdrawn) The backlight assembly of claim 22, wherein the second light emission angle is larger than the first light emission angle, and the light reflection pattern includes a plurality of dots having a prism pattern on a surface of the dots.

24. (Withdrawn) The backlight assembly of claim 23, wherein the light reflection pattern has different densities of the dots at different areas on the first light emission surface such that the closer is an area of the light reflection pattern to the light incident surface, the lower is a density of the dots at the area.

25. (Withdrawn) The backlight assembly of claim 24, wherein the dots have different sizes such that the more distant is a dot from the light incident surface, the larger is the dot.

26. (Withdrawn) The backlight assembly of claim 24, wherein the dots have a substantially identical size, and a number of the dots at a unit area closer to the light incident surface is smaller than a number of the dots at a unit area farther from the light incident surface.

27. (Withdrawn) The backlight assembly of claim 23, wherein the dots each have light reflecting surfaces elongated in a selected direction, and adjacent ones of the light reflecting surfaces meet each other at elongated edges of the adjacent light reflecting surfaces to form an angle between the adjacent reflecting surfaces, the prism pattern formed on each of the dots including prisms each having the adjacent light reflecting surfaces.

28. (Withdrawn) The backlight assembly of claim 27, wherein the angle between the adjacent reflecting surfaces is in a range from about 80° to about 120°.

29. (Withdrawn) The backlight assembly of claim 27, wherein the dots of the light reflecting pattern include first dots having the light reflecting surfaces aligned in a first direction and second dots having the light reflecting surfaces aligned in a second direction, the first direction being parallel with the light incident surface and the first and second directions being perpendicular to each other.

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30. (Withdrawn) The backlight assembly of claim 27, wherein the dots of the light reflecting pattern include first dots having the light reflecting surfaces aligned in a first direction and second dots having the light reflecting surfaces aligned in a second direction, the first direction being parallel with the light incident surface and the second direction being one of random directions independent of the first direction.

31. (Withdrawn) The backlight assembly of claim 27, wherein the dots of the light reflecting pattern include first dots having the light reflecting surfaces aligned in a first direction and second dots having the light reflecting surfaces aligned in a second direction, the first dots being arranged in a matrix form and the second dots being each interposed between adjacent ones of the first dots.

32. (Withdrawn) The backlight assembly of claim 22, wherein the light source is bent to cover at least two side surfaces of the light guide plate, the dots of the light reflection pattern having different sizes such that dots at a central area on the first light emission surface are larger than dots at a marginal area of the first light emission surface.

33. (Withdrawn) The backlight assembly of claim 22, wherein the light source is bent to cover at least two side surfaces of the light guide plate, the dots of the light reflection pattern each including light reflecting surfaces each having at least one bent portion so that the bent light reflecting surfaces reflect the light from the light source.

34. (Withdrawn) The backlight assembly of claim 22, further including a second light source for providing light to a second light incident surface of the light guide plate, wherein the dots of the light reflection pattern have different sizes such that the closer is a dot to one of the light incident surfaces, the smaller the dot is.

35. (Withdrawn) The backlight assembly of claim 34, wherein the two light sources are bent to cover all the side surfaces of the light guide plate, the dots of the light reflection pattern

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having different sizes such that dots at a central area on the first light emission surface are larger than dots at a marginal area of the first light emission surface.

36. (Withdrawn) The backlight assembly of claim 35, wherein the dots of the light reflection pattern each include light reflecting surfaces each having at least one bent portion so that the bent light reflecting surfaces reflect the light from the two light sources.

37. (Withdrawn) The backlight assembly of claim 35, wherein the dots of the light reflection pattern each include light reflecting surfaces each having a concentric circular shape.

38. (Withdrawn) The backlight assembly of claim 22, further including a reflection plate for reflecting light leaked from the first light emission surface of the light guide plate.

39. (Withdrawn) The backlight assembly of claim 22, further including a diffusion sheet for diffusing light exited from the second light emission surface to make distribution of the light uniform.

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40. (Withdrawn) A liquid crystal display device for displaying images, comprising:
a backlight assembly including:

a light guide plate including:

a light incident surface for receiving light;

first and second light emission surfaces for emitting light at a first light emission angle with respect to the first and second light emission surfaces; and

a light reflection pattern formed on the first light emission surface, for reflecting light toward the second light emission surface, wherein the reflected light from the light reflection pattern exits the second light emission surface at a second light emission angle with respect to the second light emission surface;

a light source for providing light to the light incident surface of the light guide plate; and

a receiving container for receiving the light guide plate and the light source;

a display panel for receiving the light from the backlight assembly to display the images;

and

a chassis for securing the display panel with the backlight assembly.

41. (Withdrawn) The liquid crystal display device of claim 40, wherein the light reflection pattern includes a plurality of dots having a prim pattern on a surface of the dots, and the light reflection pattern has different densities of the dots at different areas on the first light emission surface such that the closer is an area of the light reflection pattern to the light incident surface, the lower is a density of the dots at the area.

42. (Withdrawn) The liquid crystal display device of claim 40, wherein the second light emission angle is larger than the first light emission angle; the light reflection pattern includes a plurality of dots having a prim pattern on a surface of the dots; the dots each have light reflecting surfaces elongated in a selected direction, adjacent ones of the light reflecting surfaces meeting each other at elongated edges of the adjacent light reflecting surfaces to form an angle between the adjacent reflecting surfaces; and the angle between the adjacent reflecting surfaces is in a range from about 80° to about 120°.

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43. (Withdrawn) The liquid crystal display device of claim 42, wherein the dots of the light reflecting pattern include first dots having the light reflecting surfaces aligned in a first direction and second dots having the light reflecting surfaces aligned in a second direction, the first direction being parallel with the light incident surface and the first and second directions being perpendicular to each other.

44. (Withdrawn) The liquid crystal display device of claim 42, wherein the dots of the light reflecting pattern include first dots having the light reflecting surfaces aligned in a first direction and second dots having the light reflecting surfaces aligned in a second direction, the first direction being parallel with the light incident surface and the second direction being one of random directions independent of the first direction.

45. (Withdrawn) The liquid crystal display device of claim 42, wherein the dots of the light reflecting pattern include first dots having the light reflecting surfaces aligned in a first direction and second dots having the light reflecting surfaces aligned in a second direction, the first dots being arranged in a matrix form and the second dots being each interposed between adjacent ones of the first dots.

46. (Withdrawn) A method for fabricating a light guide plate, comprising:
preparing a body of the light guide plate, the body having surfaces including a light incident surface and light emission surfaces;
placing a pattern mask on a first light emission surface, the pattern mask having a plurality of openings;
filling the openings with material having fluidity;
first curing the material;
removing the pattern mask to form a plurality of dots of the first cured material;
forming a pattern on surfaces of the dots of the first cured material; and
second curing the dots of the first cured material to form solid dots with the pattern.

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47. (Withdrawn) The method of claim 46, wherein the material of the dots is UV (ultraviolet) curable material, the first curing comprising applying UV beam over the UV curable material filled in the openings.

48. (Withdrawn) The method of claim 47, wherein the second curing comprising applying the UV beam over the dots of the first cured material to the extent that the dots become solid.

49. (Withdrawn) The method of claim 47, wherein the UV beam is applied in the first curing to the extent that the material in the openings gains solidity enough not to be transformed in absence of the pattern mask.

50. (Withdrawn) The method of claim 46, wherein the filling the openings with material comprising scraping the material disposed on the pattern mask to level the material with surface of the pattern mask.

51. (Withdrawn) The method of claim 46, further comprising forming the openings of the pattern mask in different sizes such that a size of an opening is inversely proportional to a distance between the opening and the light incident surface of the body.

52. (Withdrawn) A method for fabricating a light guide plate, comprising:
preparing a body of the light guide plate, the body having surfaces including a light incident surface and light emission surfaces;
forming recesses with a pattern on a roller disposed on a first light emission surface of the body;
filling the recesses with material having fluidity;
first curing the material having fluidity;
rotating the roller to proceed forward so that the first cured material is separated from the recesses and a plurality of dots of the first cured material are formed on the first light emission surface; and

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second curing the dots of the first cured material to form solid dots with the pattern.

53. (Withdrawn) The method of claim 52, wherein the material of the dots is UV curable material, the first curing comprising applying UV beam over the UV curable material filled in the recesses.

54. (Withdrawn) The method of claim 52, wherein the second curing comprising applying the UV beam over the dots of the first cured material to the extent that the dots become solid.

55. (Withdrawn) The method of claim 52, wherein the UV beam is applied in the first curing to the extent that adhesive force between contacting surfaces of the first cured material and the body is greater than adhesive force between contacting surfaces of the first cured material and the recesses.

56. (Withdrawn) The method of claim 52, wherein the filling the recesses with material comprising scraping the material disposed on the pattern mask to level the material with surface of the pattern mask.

57. (Withdrawn) The method of claim 52, wherein the forming recesses comprising forming elongated surfaces of a prism shape on bottom of the respective recesses, so that the dots each have the elongated surfaces of the prism shape for reflecting light from the light incident surface toward a second light emission surface.

58. (Currently Amended) A light guide plate comprising:
a light incident surface for receiving light;
first and second light emission surfaces for emitting light at a first light emission angle with respect to the first and second light emission surfaces; and
a light reflection pattern formed on the first light emission surface, for reflecting light toward the second light emission surface, the light reflection pattern including a plurality of dots,

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each of the dots having a cross-sectional profile of triangular grooves~~prism pattern~~ formed on a corresponding dot, the triangular grooves being linked together and elongated~~the prism pattern elongated~~ in a specific direction, the direction aligned parallel with the light incident surface.

59. (Previously Presented) The light guide plate of claim 58, wherein the light reflection pattern has different densities of the dots at different areas on the first light emission surface such that a density of the dots increases as a distance from the light incident surface increases.

60. (Previously Presented) The light guide plate of claim 59, wherein the dots have different sizes such that a size of the dots increases as a distance from the light incident surface increases.

61. (Previously Presented) The light guide plate of claim 59, wherein the dots have a substantially identical size, and a number of the dots at a unit area closer to the light incident surface is smaller than a number of the dots at a unit area farther from the light incident surface.

62. (Previously Presented) The light guide plate of claim 58, wherein the dots of the light reflection pattern are formed integrally on the first light emission surface.

63. (Currently Amended) A light guide plate comprising:
a light incident surface for receiving light; and
first and second light emission surfaces for emitting light;
wherein the first emission surface includes a plurality of protrusions having a geometrically regular pattern, wherein the geometrically regular pattern is a plurality of microgrooves.

64. (Canceled)

65. (Currently Amended) The light guide plate of claim 63[[4]], wherein the microgrooves is linked along a boundary of the protrusions.

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66. (Currently Amended) The light guide plate of claim 63~~[[4]]~~, wherein depth of each of the microgrooves is different.

67. (Previously Presented) The light guide plate of claim 63, wherein density of the geometrically regular pattern in the each protrusion is different according to the distance from a light source.

68. (Previously Presented) The light guide plate of claim of 63, wherein the closer the protrusions are to the light incident surface, the lower a density of the protrusions at the area.

69. (Previously Presented) The light guide plate of claim 63, wherein the protrusions have different sizes such that the more distant a protrusion is from the light incident surface, the larger the protrusion is.

70. (Previously Presented) The light guide plate of claim 63, wherein the protrusions have a substantially identical size, and a number of the protrusions at a unit area closer to the light incident surface is smaller than a number of the protrusions at a unit area farther from the light incident surface.

71. (Previously Presented) The light guide plate of claim 63, the geometrically regular pattern is a plurality of fine structures, each of the fine structures having a different height.

72. (Previously Presented) The light guide plate of claim 63, wherein the geometrically regular pattern is a plurality of fine structures, each of the fine structures being linked together.

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